

contactor

Anglais

MV distribution
factory built assemblies
at your service

instructions for use

***ROLLARC
withdrawable in MCset***

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symbols and conventions

Caution:
you will find all the symbols below throughout the document, indicating the hazard levels depending on the different types of situation.

**DANGER**

as per iso 3864–2

DANGER: failure to follow this instruction will result in death or serious injury.

**WARNING**

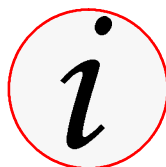
as per iso 3864–2

WARNING: failure to follow this instruction may result in death or serious injury.

**CAUTION**

as per iso 3864–2

CAUTION: failure to follow this instruction may result in injuries.
This alert signal can also be used to indicate practices that could damage the SM6 unit.

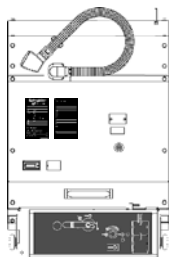
**INFORMATION-ADVICE**

We draw your attention to this specific point.

**contact the Schneider
Electric service unit for
diagnosis and advice**



Call your sales representative who
will put you in contact with
the closest
SCHNEIDER ELECTRIC
group service centre.
You can log on to:
www.schneider-electric.com



distribution rules



**The aim of this publication
is to enable the SM6 unit
to be installed correctly.**

This document is not a commercial
document.
It is a strictly technical document
drawn up by
Schneider Electric.

safety rules



CAUTION

All the operations described below
must be performed in compliance
with applicable safety standards,
**under the responsibility
of a competent authority.**



WARNING

**The contractor must be certified
and authorised to manipulate
and perform work on the SM6
unit.**

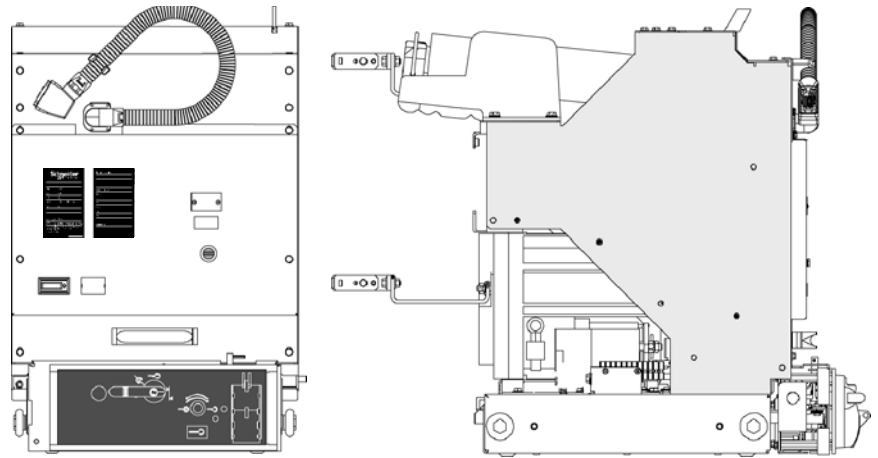


CAUTION

Only undertake the work after
having read and understood
all the explanations given in this
document.

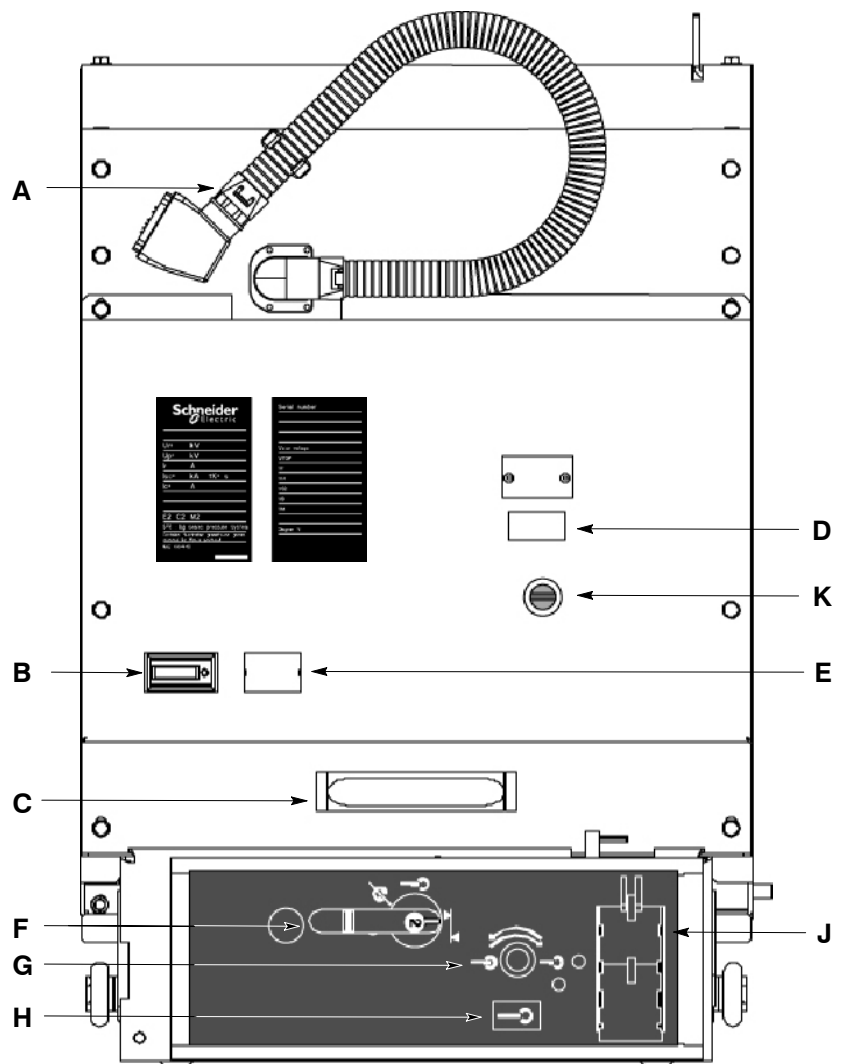
If you have any difficulty complying
with these rules,
please contact **Schneider
Electric.**

draw-out contactor



front face

- A** : LV connection cord
- B** : operation counter
- C** : extraction handle
- D** : fuse state mechanical indicator
- E** : contactor state mechanical indicator only in the mechanical latching version)
- F** : moving part position selector
- G** : opening for inserting the moving part operating crank shaft
- H** : mechanical indicator for signalling the moving part position
- J** : mechanical opening pushbutton
- K** : LV fuse



identification

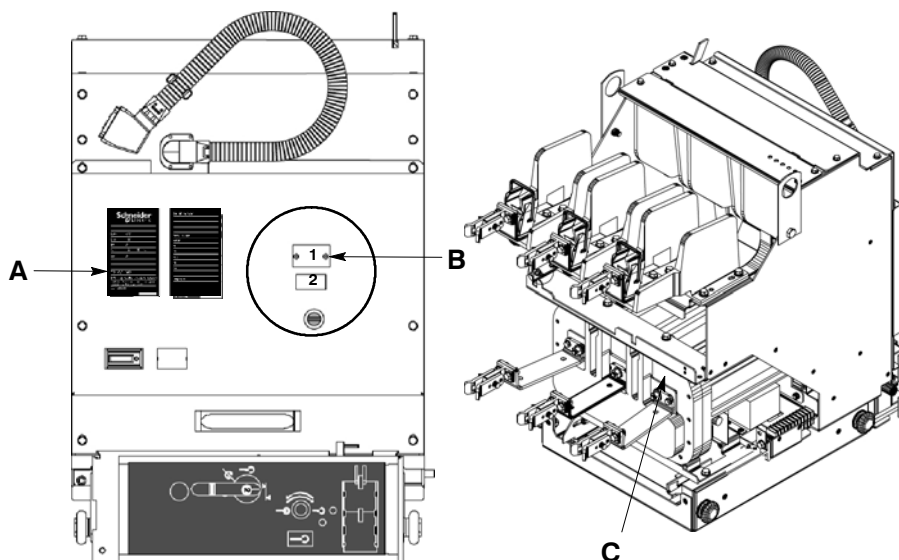
Check:

■ that the details marked on the information plates match those defined on the order form.

■ that the wiring diagram is enclosed with the device.

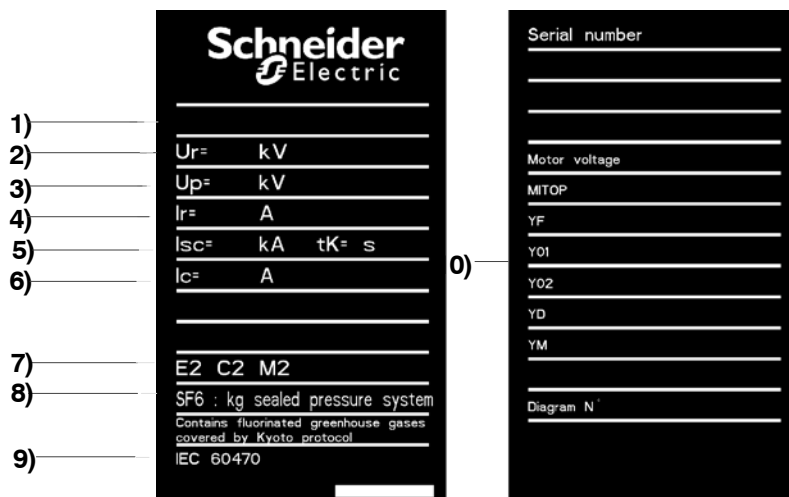
location of the information plates

- A** : type and performance of the contactor
B : fuse characteristics
C : serial number and reference



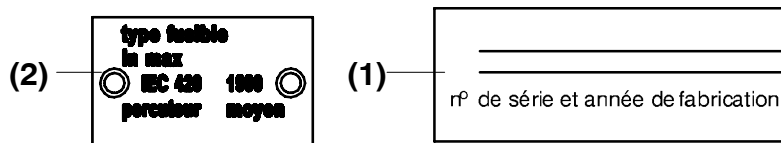
contactor and auxiliaries rating plates

- 1 : device type designation
 2 : rated voltage
 3 : rated lightning impulse withstand voltage
 4 : rated continuous operating current
 5 : rated breaking capacity for CC 3s
 6 : no-load breaking capacity
 7 : class
 8 : SF6 mass
 9 : reference standard
 10 : characteristics information plates



B(1) fuse characteristics information plates

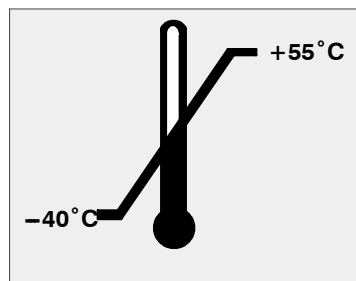
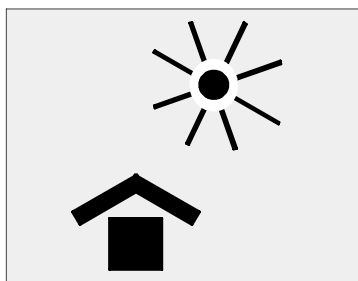
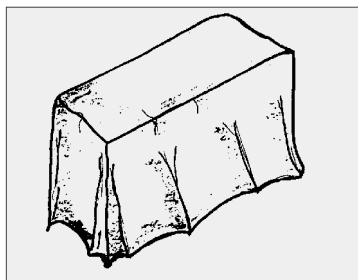
B(2) series n°. and reference rating plates



storage

The **ROLLARC** contactors are dispatched in **MCset FUs** in the **draw-out position**.

Store the devices in their original packing.



prolonged storage

In the exceptional case in which the device is delivered separately from an MCset FU and for prolonged storage, the device must remain in its original packing.

Following prolonged storage, thoroughly clean all the insulating parts before putting into operation. The enclosure must be dusted using a dry, clean cloth.

unpacking and handling preparation

In the exceptional case in which the device is delivered separately from an MCset FU handling by lifting.

- unpack the devices on the installation site.

- avoid impacts

Once the device has been unpacked, it must be handled by lifting or rolling.

handling by lifting

Sling the device using the lifting lugs and place it on the ground. Unhook the slings and remove the handling parts and their screws and bolts.

NB: the lifting lugs and screws and bolts must be kept in view of subsequent handling operations.

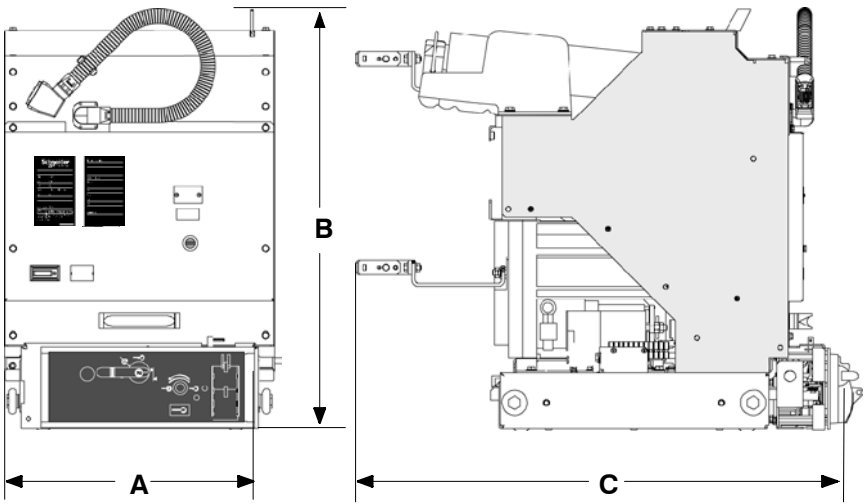
handling by rolling

The device is handled by means of the moving part extraction device (ERD) on a smooth floor. The device must be handled by the front face.



never pull or push the device by the poles (the poles are pressurised).

overall dimensions



devices	phase-to-phase	dimensions			weight in Kg
		A	B	C	
ROLLARC 250 A	145	492	749	901	159

07896865EN revision : 02

fitting and extraction

To fit or extract a **ROLLARC** of an **MCset SUP2** functional unit...

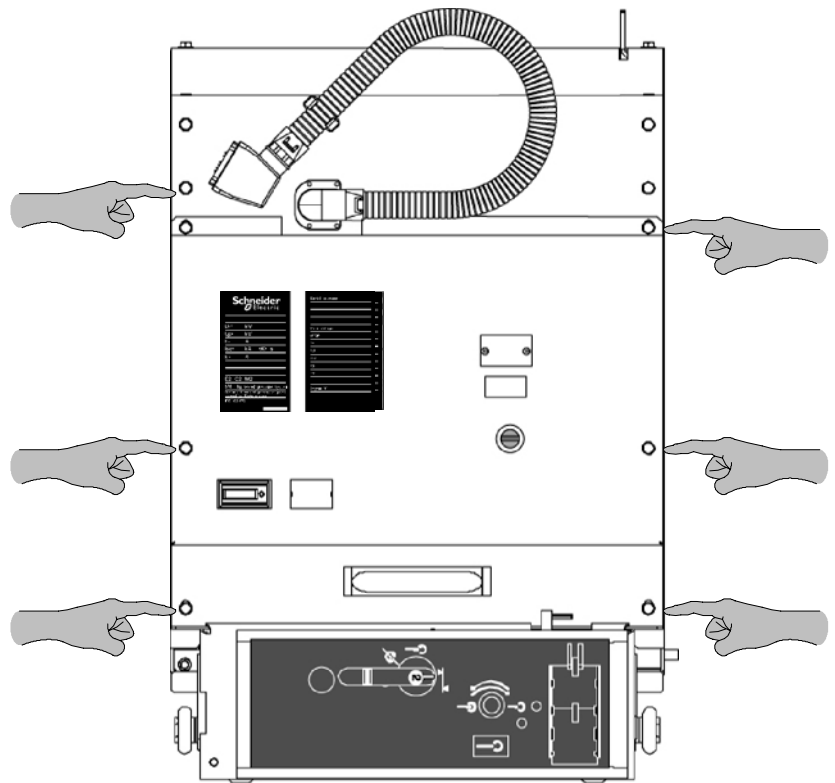
...refer to the functional unit user manual.

plug-in and plug-out

To plug in or out a **ROLLARC** in an **MCset SUP2** functional unit...

... refer to the functional unit user manual.

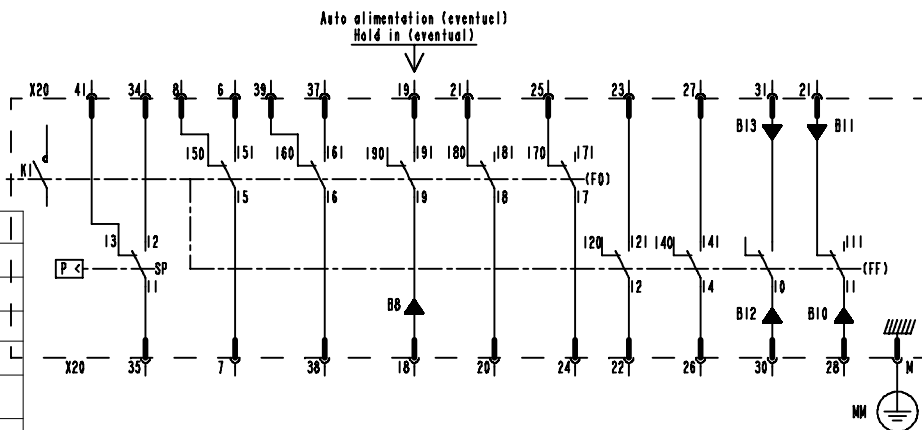
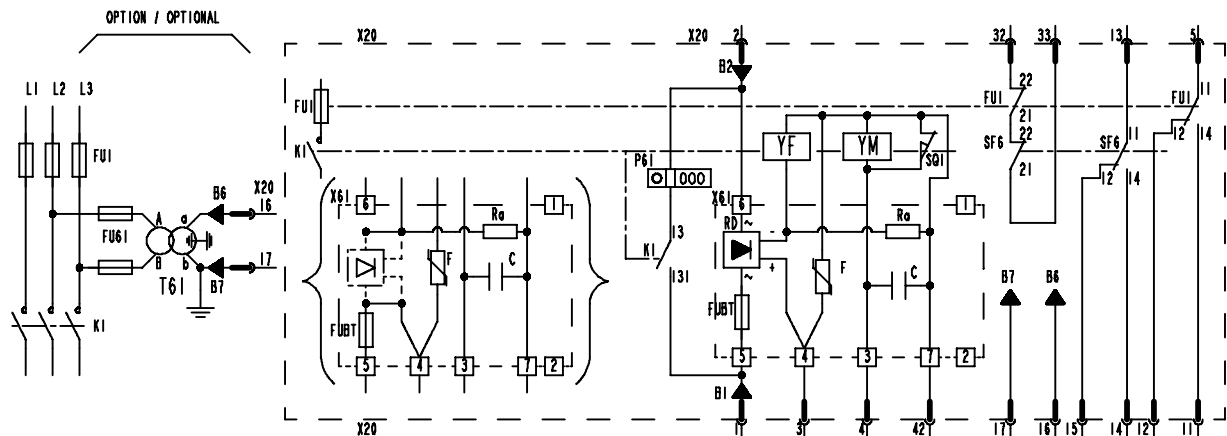
removing the front plate



Remove the 6 screws fixing the front plate.
Remove the front plate.

The panel is put back in reverse order to disassembly.

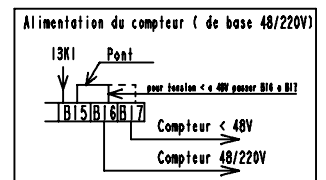
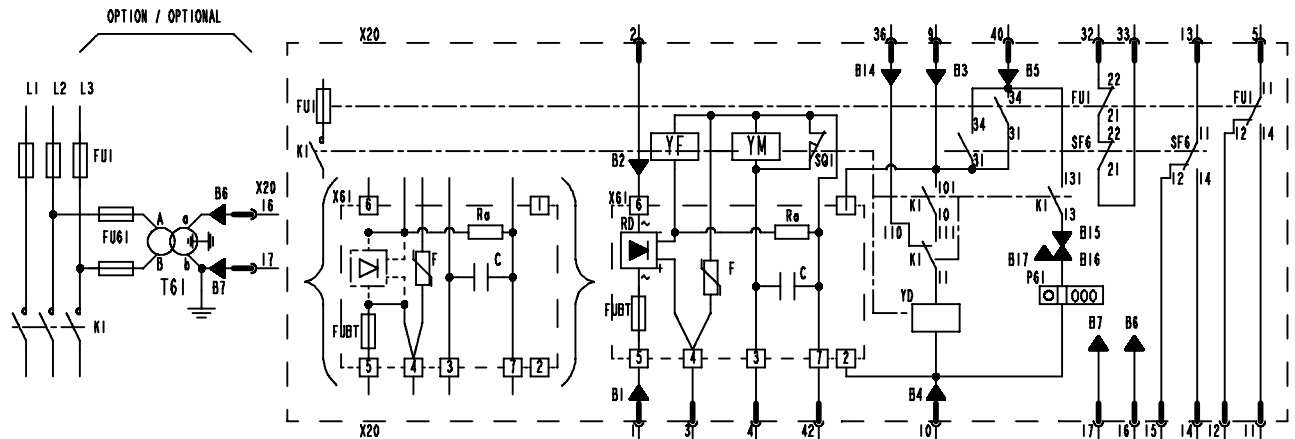
Rollarc 400
diagram 03406765



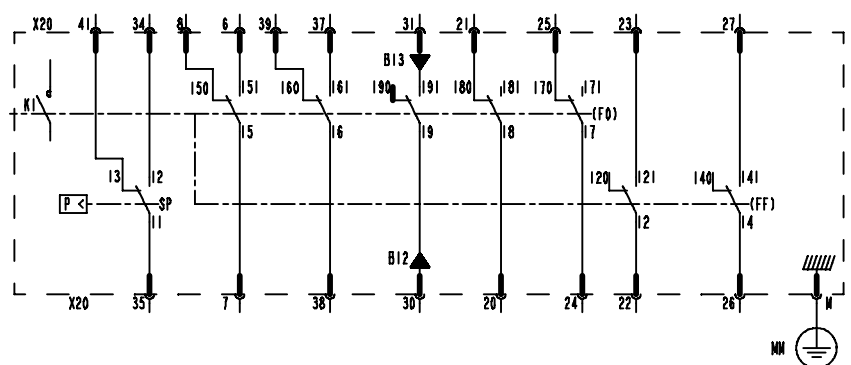
▶		Connecting block
FF		Auxiliary switches
Fo		Auxiliary switches
RD	2.2A - 500V	Bridge rectifier
MM		Mass
SP	<div><div>0.4A - 220V</div><div>2.2A - 220V</div></div>	Pressure switch
X20	42 active contact + 1 earth cont.	Multi-pin connector
S6I		Pre-in coil contact
SQI		Seal-in coil contact
YM	Power <div><div>30W</div><div>40VA</div></div>	Seal-in coils
YF	Power <div><div>1050W</div><div>900VA</div></div>	Closing coils
C	1µF-250V	Capacitor
Ra	1.2kΩ-3W	Resistance
F	U eff-250V - type GEMOV	Varistor
FUBT	<div><div>Un (V)</div><div>I (A)</div></div> <div><div>48</div><div>60-72</div><div>100-127</div><div>220-250</div></div> <div><div>0</div><div>3.15</div><div>2.5</div><div>1.25</div></div>	LV fuse
P6I	8 digits (LCD)	Operations counter
X6I		Contacting connecting block
FUI	L = 292mm or 440mm	HV fuse
KI	R400	HV contactor
Nom	Caracteristiques	Designation

Un (V)	48	60-72	100-127	220-250	48	110	220
Ia (A)	10	3,15	2,5	1,25	10	10	10
cos = 0,4 ~ (A)					1,1	0,4	0,24
L/R = 40 ms <div><div></div><div></div></div> (A)					0,8	0,3	0,18
Coil power					<div><div></div><div></div></div>	3 W	~ 4 VA

Rollarc 400D diagram 03406766



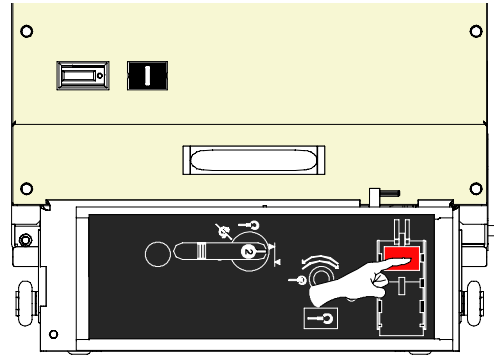
		Connecting block
FF		Auxiliary switches
Fo		Auxiliary switches
RD	2.2A - 500V	Bridge rectifier
MM		Mass
SP	0.4A - 220V 2.2A - 220V	Pressure switch
X20	42 active contact + 1 earth cont.	Multi-pin connector
YD	Power 80W 100VA	Shunt trip
S61		Pre-in coil contact
SQ1		Seal-in coil contact
YM	Power 30W 40VA	Seal-in coils
YF	Power 1050W 900VA	Closing coils
C	1µF-250V	Capacitor
Ra	1.2kΩ-3W	Resistance
F	U eff=250V - type GENOV	Varistor
FUBT	Un (V) 48 60-72 100-127 220-250 I (A) 0 3.15 2.5 1.25	LV fuse
P61	8 digits (LCD)	Operations counter
X61		Contacting connecting block
FUI	L = 292mm or 440mm	HV fuse
K1	R400D	HV contactor
Nom	Caracteristiques	Designation



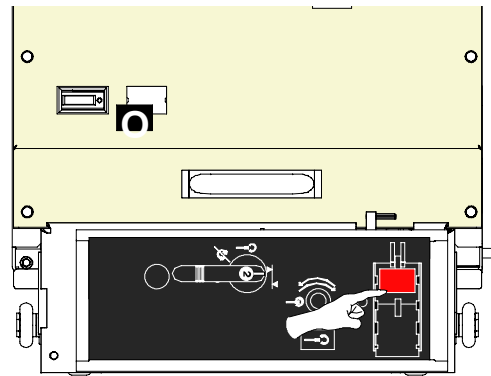
Un (V)	48	60-72	100-127	220-250	48	110	220
Ia (A)	10	3,15	2,5	1,25	10	10	10
cos = 0,4 ~ (A)					1,1	0,4	0,24
L/R = 40 ms ~ (A)					0,8	0,3	0,18
Coil power					3 W		~ 4 VA

mechanical opening of the contacteur

Only for the ROLLARC contactor version with mechanical latching.



Press the red button.



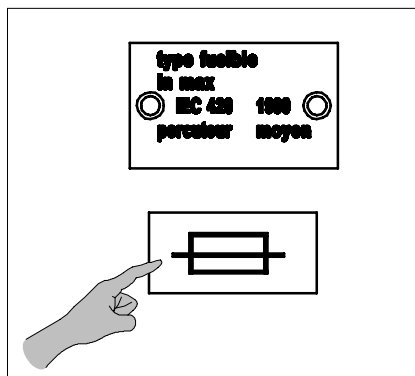
This operation causes a reaction and displays...

...the “O” device status.

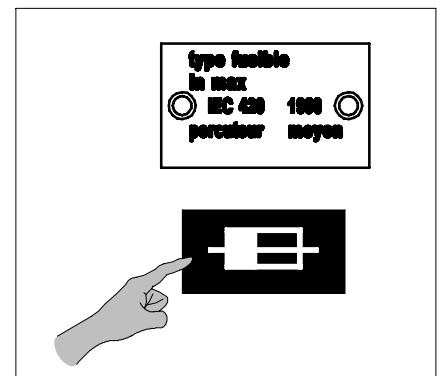
MV fuse blowing indication



All three fuses **MUST** be replaced.



The indicator light shows that the fuses are in proper operating order.



The indicator light shows that one or more fuses are no longer in proper operating order.

[illegible]

foreword safety instructions

All the operations described below must be carried out according to current safety standards, **under the responsibility of a competent authority**.

The pressure switch must be connected to obtain pressure level information.



Before all operations:

- open the contactor and isolate it from the mains.
- cut the supply to the auxiliary circuits and the main circuit.
- avoid impacts (*pressurised enclosure*).

general rules

Our devices are designed to guarantee optimum service provided that the maintenance operations described in this document are complied with.

Using the **ERD**, extract the contactor from the cubicle. (*see the MCset user manual*).

- place the device on a support at working height in order to perform the maintenance operation.

maintenance operations and cycle

The **400** type contactor is designed to perform 300 000 mechanical operations, without maintenance of live parts (100 000 operations for type **400 D**).

The following are recommended:

- wear monitoring of the arcing contacts every 50 000 operations.

- replacement of the LV printed circuit and auxiliary contact module is recommended every 100 000 operations.

At least once a year:

- perform an overall external cleaning operation.

At least twice a year: or every 20 000 operations, lubricate using grease for low temperatures.

- the two guides of the electromagnet magnetic circuit.
 - the moving part of the auxiliary contacts.
 - the latching mechanism of type **400 D**.
- In event of very frequent operations or an extremely corrosive environment, **please consult your nearest Groupe Schneider Electric service centre**

summarising table

description	Maintenance operations	supplies	tools
pole enclosure	dust the enclosure		cloth
arcing contact degree of wear	measure the degree of wear		lamp, bell
operating mechanism			
moving partOf the auxiliary contacts	clean with a degreasing agent	non-chlorinated solvent degreasing agent	cloth
	lubricate	isoflex Topas L152 grease	brush
latching mechanism of type 400 D	clean with a degreasing agent	non-chlorinated solvent degreasing agent	cloth
	lubricate, oil	vacuoline oils 133 oil Isoflex Topas L152 grease	brush, oiler
electromagnet magnetic circuit guides	clean with a degreasing agent	non-chlorinated solvent degreasing agent	cloth
	lubricate, oil	vacuoline oils 133 oil Isoflex Topas L152 grease	brush, oiler
propulsion guide			
endless screw	clean with a degreasing agent	non-chlorinated solvent degreasing agent	cloth
	lubricate	Isoflex Topas L152 grease	brush
cam	clean with a degreasing agent	non-chlorinated solvent degreasing agent	cloth
	lubricate	Isoflex Topas L152 grease	brush

preventive maintenance and cleaning instructions

The pressurised **SF₆** gas inside the pole retains all its dielectric properties after breaking. Electrical durability is limited by contact wear.

This wear depends on device use. We draw your attention to the risk of cleaning processes, consisting of spraying solvents at high pressure.

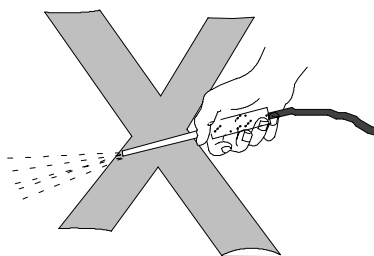
The main drawbacks of such processes are.

- damage due to jet pressure and impossibility of re-lubricating inaccessible fixing points.
- risk of overheating due to solvent presence on contact areas.
- elimination of special protections.



CAUTION

Never use solvents and alcohol.



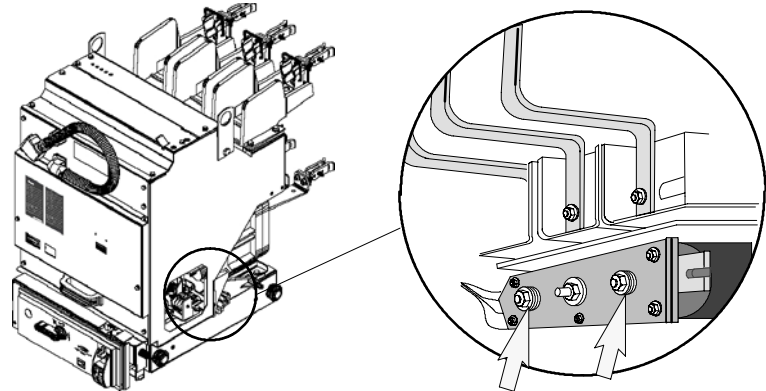
If the insulating parts are dusty, it is recommended that **you remove the dust using a dry cloth.**

monitoring arcing contact wear

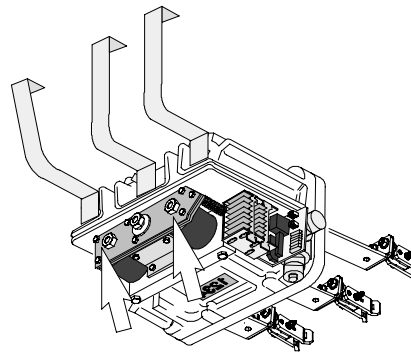
monitoring

NB:

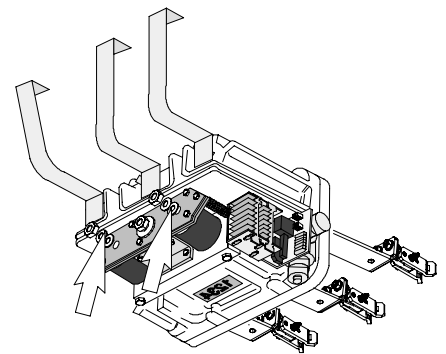
In event of repeated short-circuit current breaks, the user can check contact wear without disassembling the contactor.



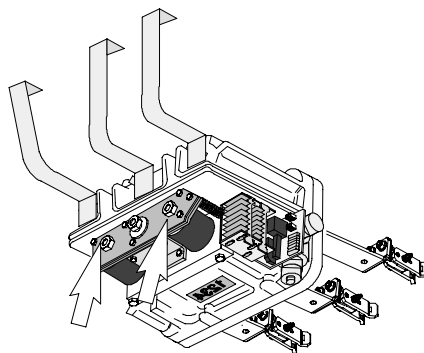
Unscrew the two self-locking nuts.



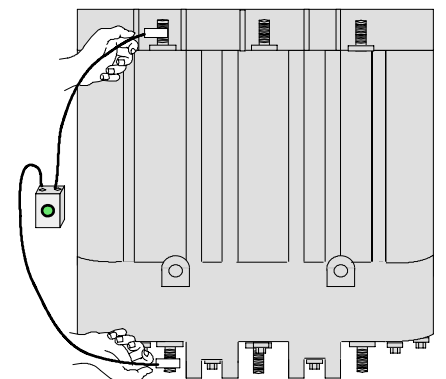
Remove the metal and neoprene washers and replace them...



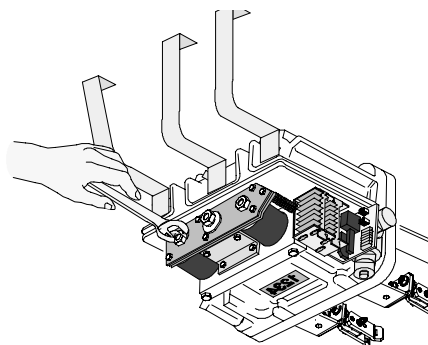
...with counternuts (Ø14 mm) or washers (roughly 8mm thick) which will act as spacers.



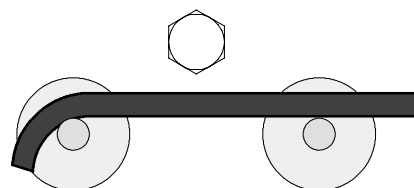
Screw in standard nuts (Ø12 mm) in place of the self-locking nuts (so as not to weaken them).



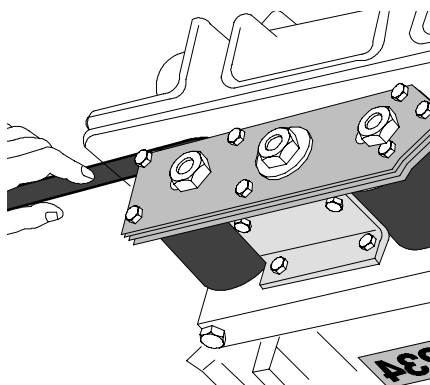
Connect an indicator lamp or "bell" between the input and output connections of pole no.1.



Simultaneously screw in the two nuts until the lamp or bell is lit.



Form a thickness gauge made up of a bent wire, of $\varnothing 3$ mm.
Position the gauge on the electromagnet magnetic circuit guides.

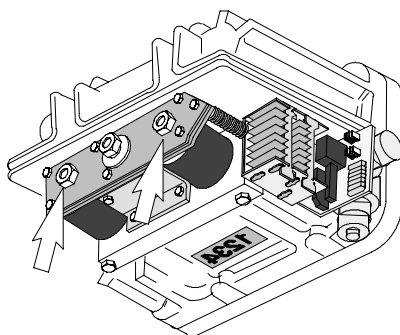


Measure the coil air gap using the gauge.

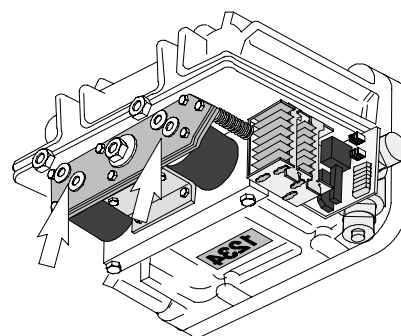
Record this measurement.

Repeat the procedure for poles 2 and 3.

If, for one or more measurements, the air gap value is less than or equal to 3mm, the contactor must be replaced (on a new device, the air gap is 5.1 mm \pm 0.5).

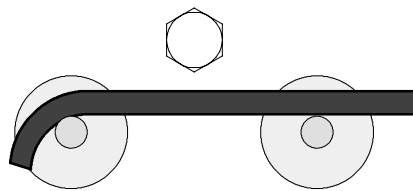


For reassembly, remove the standard nuts...



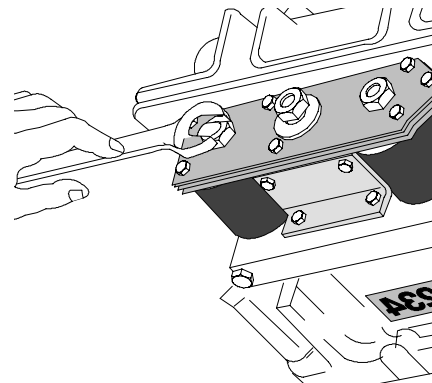
...put back the original washers and self-locking nuts (do not fit and remove the self-locking nuts more than twice).

adjusting



Form a thickness gauge made up of a bent wire, of \varnothing 12.4 mm.

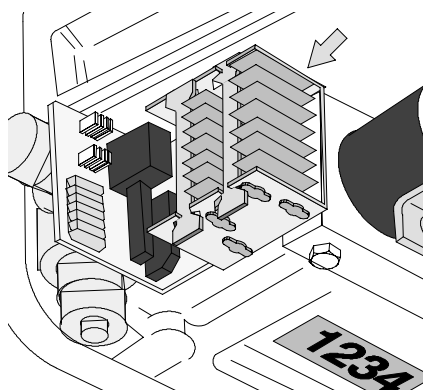
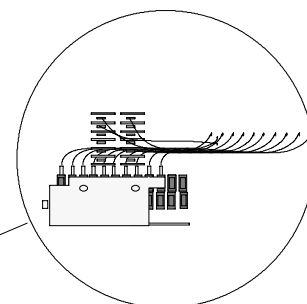
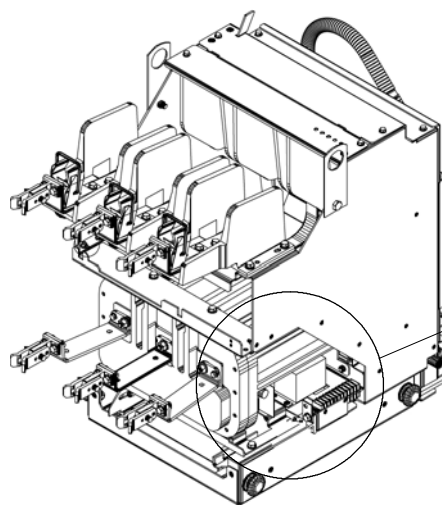
Position the gauge on the electromagnet magnetic circuit guides.



With the contactor open, insert the \varnothing 12.4mm shim in the air gap.

Simultaneously tighten the 2 self-locking nuts until the electromagnet touches the shim. Slightly loosen the nuts so that the shim can freely slide in the air gap of the two coils.

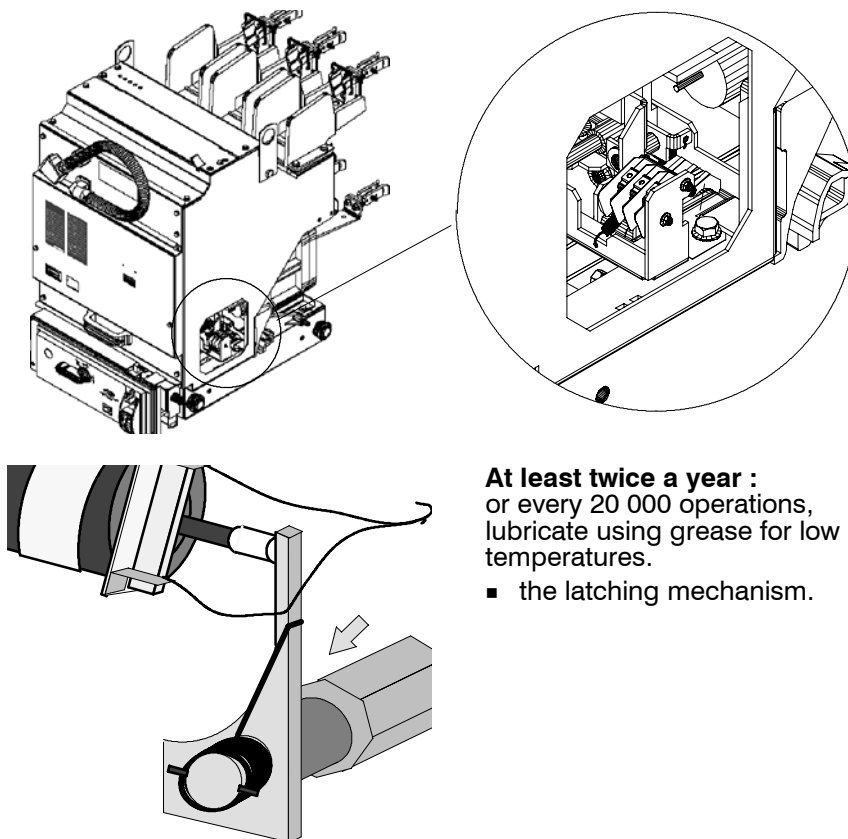
moving part of the auxiliary contacts



At least twice a year:
or every 20 000 operations,
lubricate using grease for low
temperatures.

- the moving part of the auxiliary contacts.

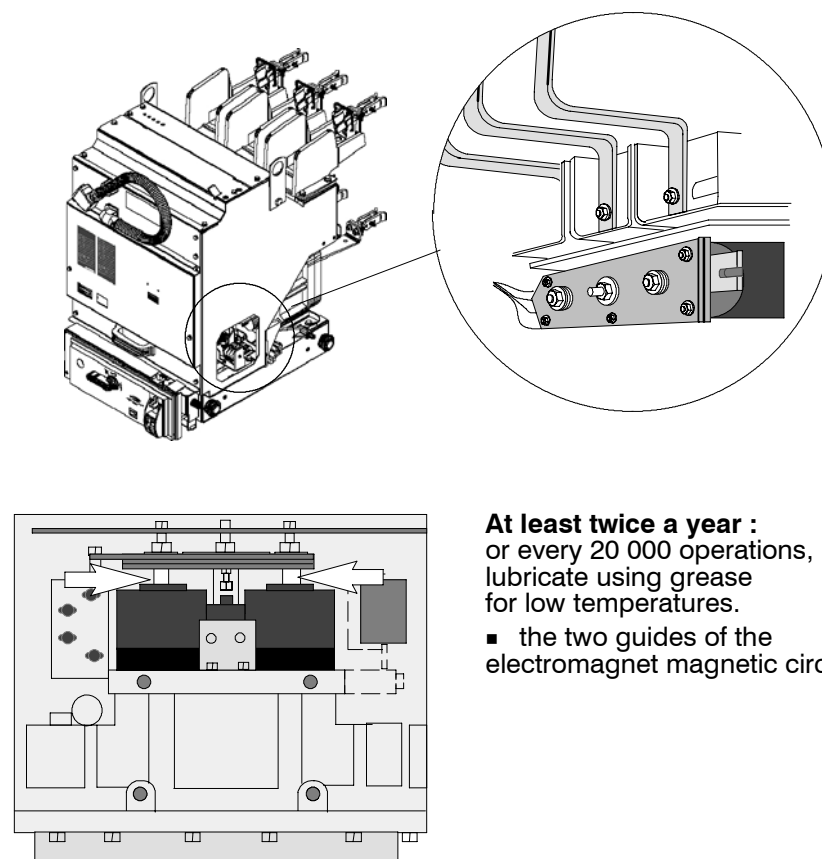
latching mechanism of type 400 D



At least twice a year :
or every 20 000 operations,
lubricate using grease for low
temperatures.

- the latching mechanism.

electromagnet magnetic circuit guides



At least twice a year :
or every 20 000 operations,
lubricate using grease for low
temperatures.

- the two guides of the
electromagnet magnetic circuit.

foreword

The corrective maintenance operations enable replacement of defective subassemblies

The operations quoted in the summarising table below can be performed by the customer or by the After-Sales representatives of the **groupe Schneider Electric**.

For all other maintenance work, contact the representatives of your nearest groupe Schneider Electric centre.

After each operation, perform the electrical tests according to current standards



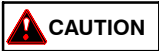
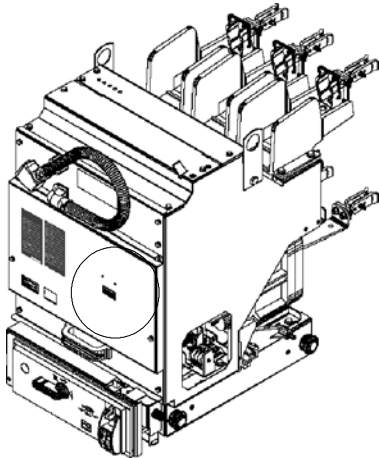
when replacing, all the accessories listed below must be replaced with new devices.

- **Nylstop (self-locking nut)**
- **Contact washer**
- **Locking pins**
- **Mechanical pin**

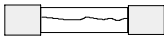
summarising table

description	performed by	comments
LV fuses or closing printed circuit.	Schneider Electric or Customer	Place the device on a support at working height in order to make the replacement.
LV fuses	Schneider Electric or Customer	
disconnection contact (yoke position)	Schneider Electric or Customer	Place the device on a support at working height in order to make the replacement.
shunt release (400 D)	Schneider Electric	
holding winding insertion contacts	Schneider Electric	
closing coil	Schneider Electric	
arcing contact degrees of wear	Schneider Electric or Customer	
plug-in position contact Printed circuit + STPI relay support	Schneider Electric or Customer	Refer to the MCset user manual.
fuse blowing contact	Schneider Electric or Customer	
operation counter	Schneider Electric or Customer	On the ERD, bring the device to working height in order to make the replacement.
mechanical position indicator	Schneider Electric or Customer	
MV fuses of same dimensions	Schneider Electric or Customer	
MV fuses of different dimensions	Schneider Electric	
VT fuse	Schneider Electric or Customer	
voltage Transformer	Schneider Electric or Customer	
contacteur 400 or 400D	Schneider Electric	
plug-in probes	Schneider Electric or Customer	

replacing the LV fuse



fuses with large time delay

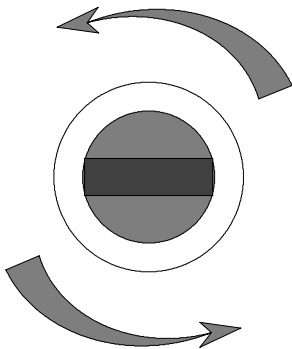


Use fuses of the same type as those contactor .

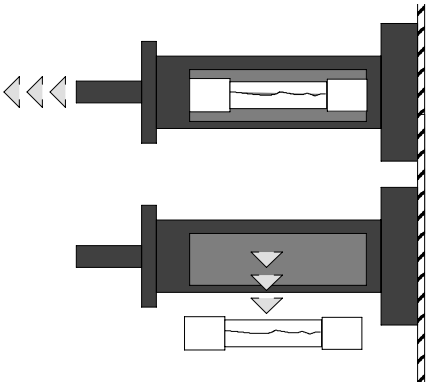
LV fuse choice table

48–50 VDC	50–60 Hz	1 0 A
60–72 VDC	50–60 Hz	3,1 5 A
1 00–1 27 VDC	50–60 Hz	2,5 A
220–250 VDC	50–60 Hz	1,25A

removal



Push and turn in an anti-clockwise direction.

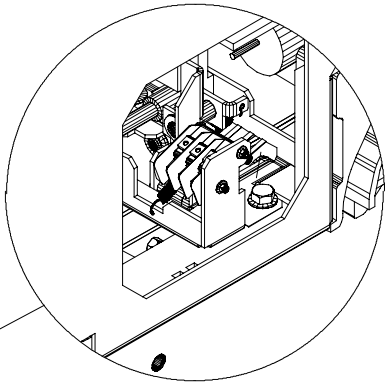
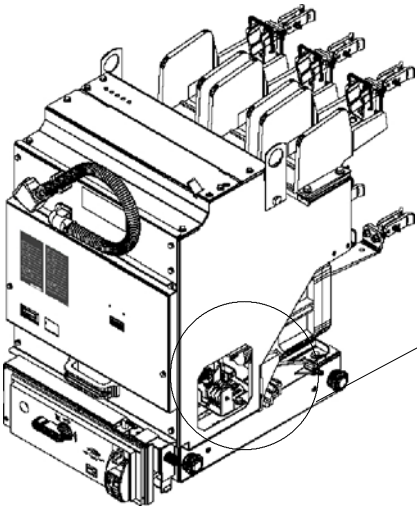


Pull to open the rack and extract the fuse.

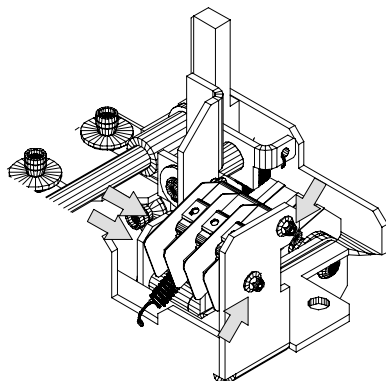
fitting

Reassemble by performing the opposite operations to removal.

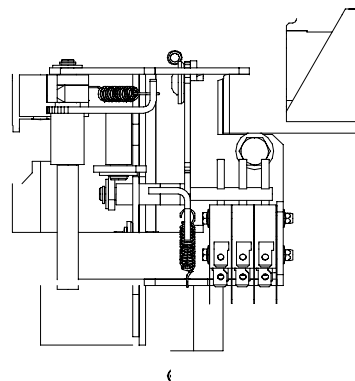
replacing the disconnection contacts (yoke position)



removal



Remove the fixing screws.
Remove the contacts and isolating
screens.



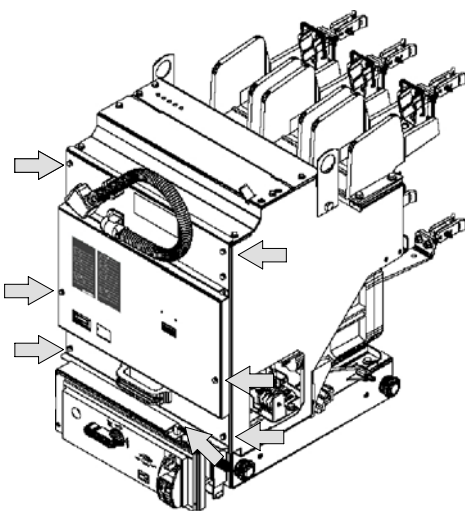
Mark and disconnect wiring.

fitting

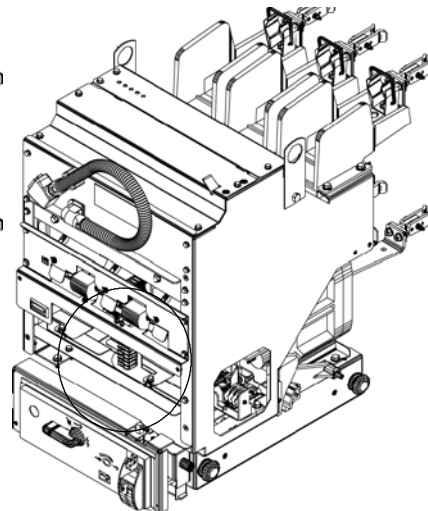
Proceed in reverse order.
Fit new isolating screens.

■ lock the contact fixing screws.
Tightening torque: 0.7 Nm.

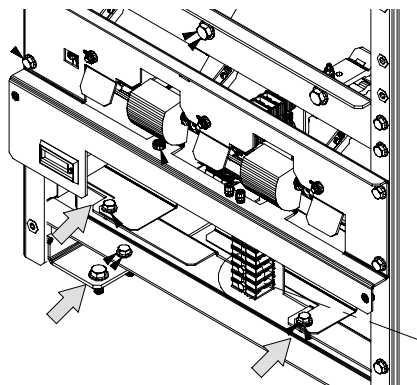
replacing the fuse blowing contact



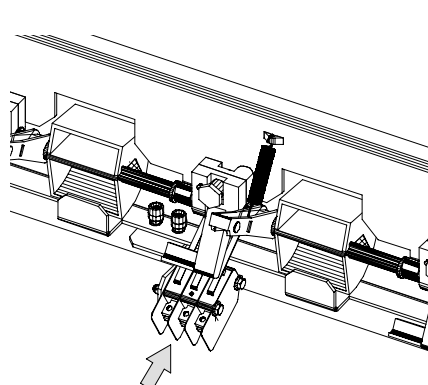
Remove the screws and protection
front plate.



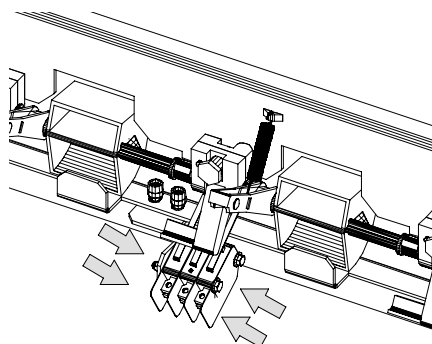
removal



Remove the protective plate.



Mark and disconnect wiring.



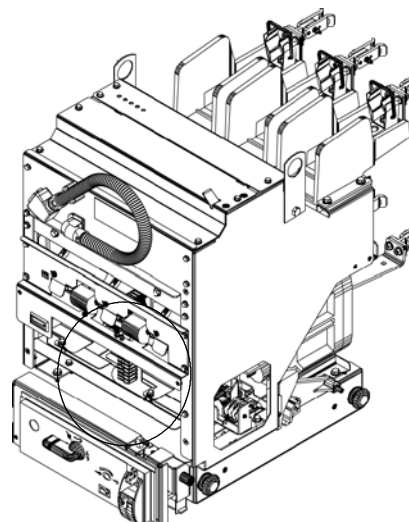
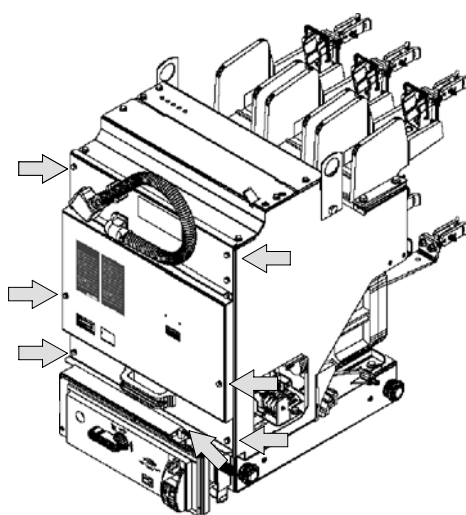
Remove the fixing screws.
Remove the contacts and isolating screens.

fitting

Proceed in reverse order
Fit new isolating screens.

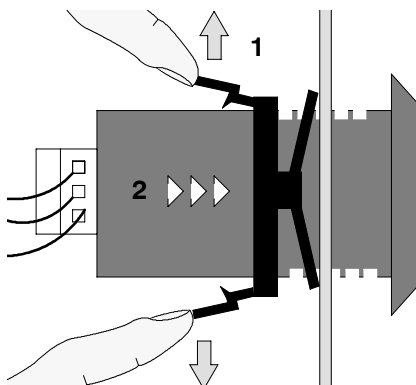
■ lock the contact fixing screws.
Tightening torque: 0,7 Nm.

replacing the operation counter

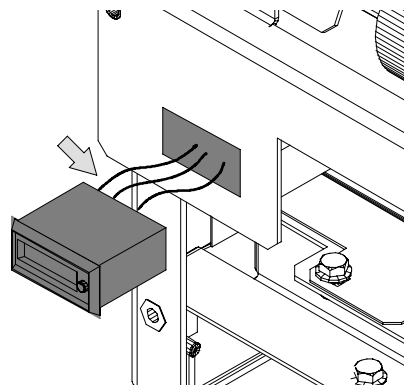


Remove the screws and protection front plate.

removal

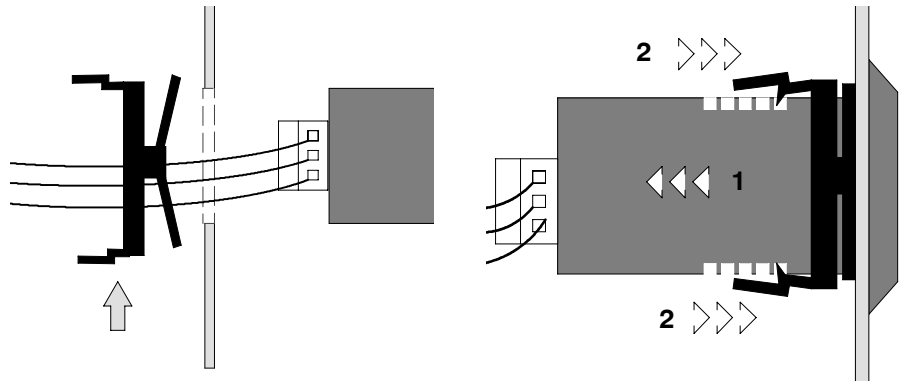


1 : unclip the counter
2 : extract it from the front of the device.



Mark and disconnect wiring.
Remove the fixing part and counter.

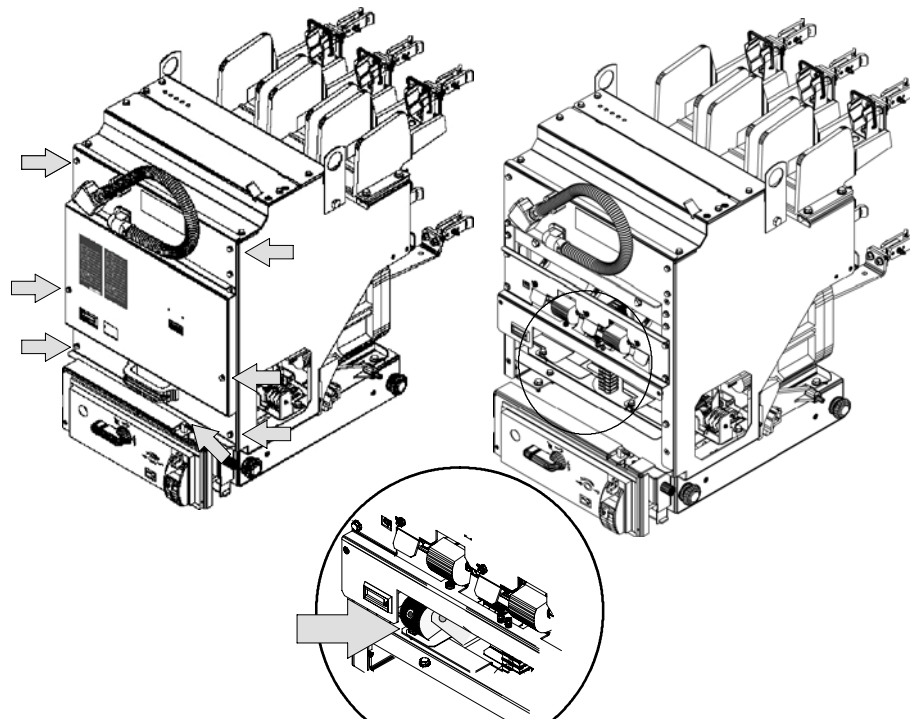
fitting



Insert the wire strand in the fixing part.
Connect the wires.

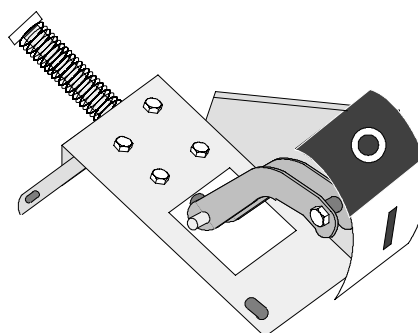
1 : rest the counter on the plate.
2 : clip on the counter.

replacing the position indicator module

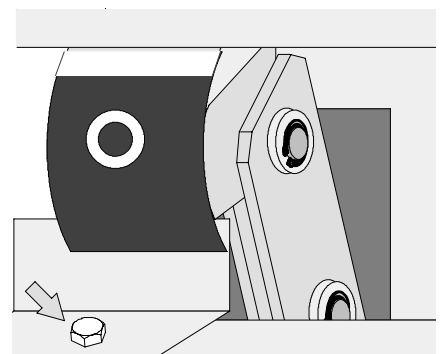


Remove the screws and protection front plate.

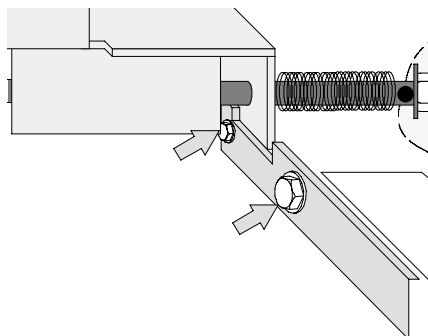
removal



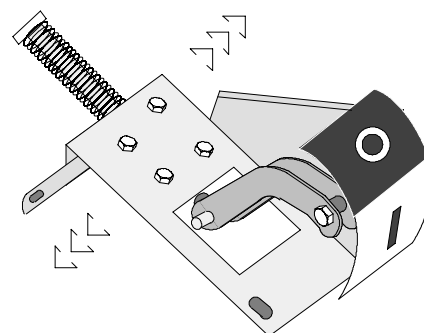
Position indicator module.



Remove the fixing screws on the front panel of the device.



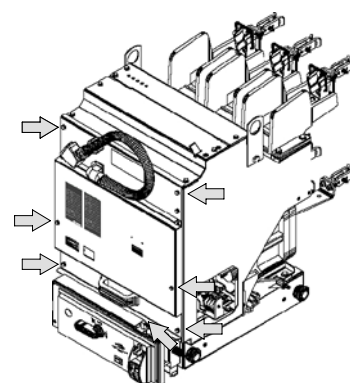
Remove the fixing screws inside the device.



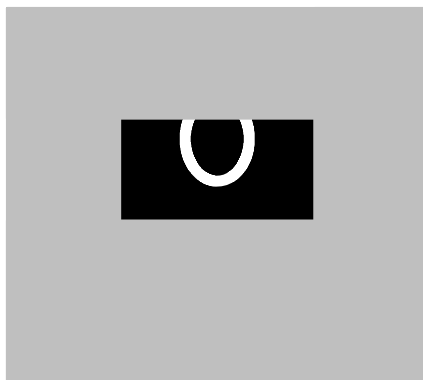
Release the module.

fitting

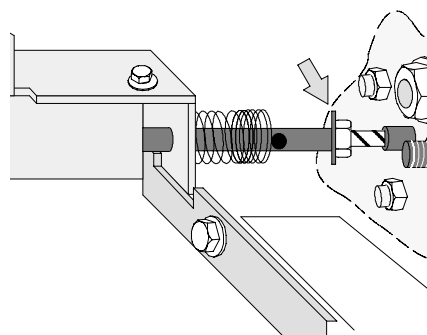
Proceed in reverse order.
 ■ lock the module fixing screws.
Tightening torque: 13 Nm.
 Fit the front plate and screws.



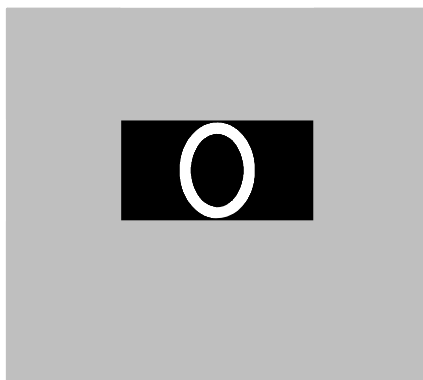
setting



Ensure that the indicator light is in the right position.

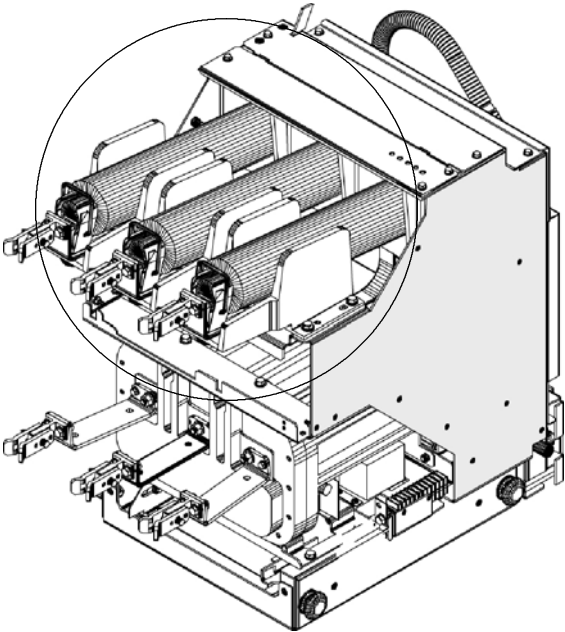


Otherwise, adjust this screw...

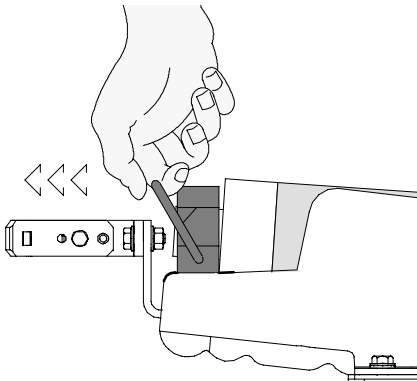


... so that the indicator light is in the right position.

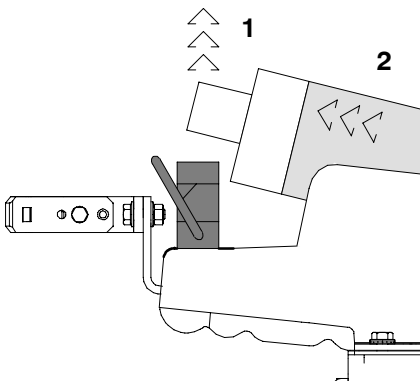
**replacing MV fuses of
the same dimensions**



removal

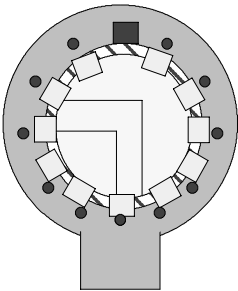


Release the fuse fixing system.

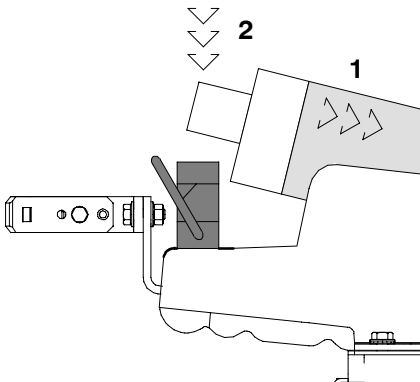


Extract the fuse.

fitting

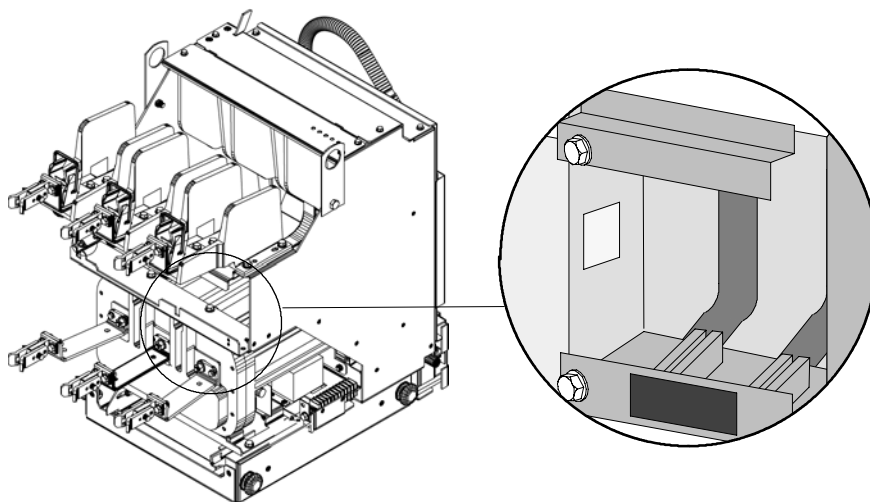


Fit the fuse on the striker side into
the pole annular socket.

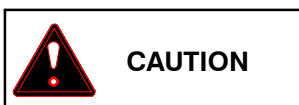


Fit the fuse in the fuse fixing
system.

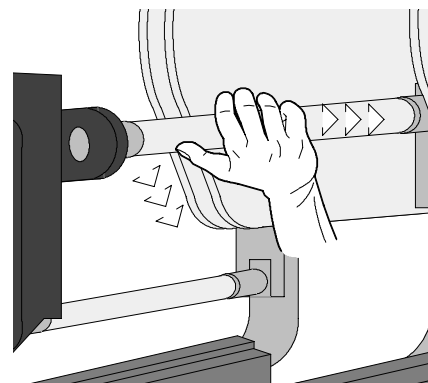
replacing the VT fuses



removal



Use fuses of the same type as those delivered with the contactor.



Extract the fuse

fitting

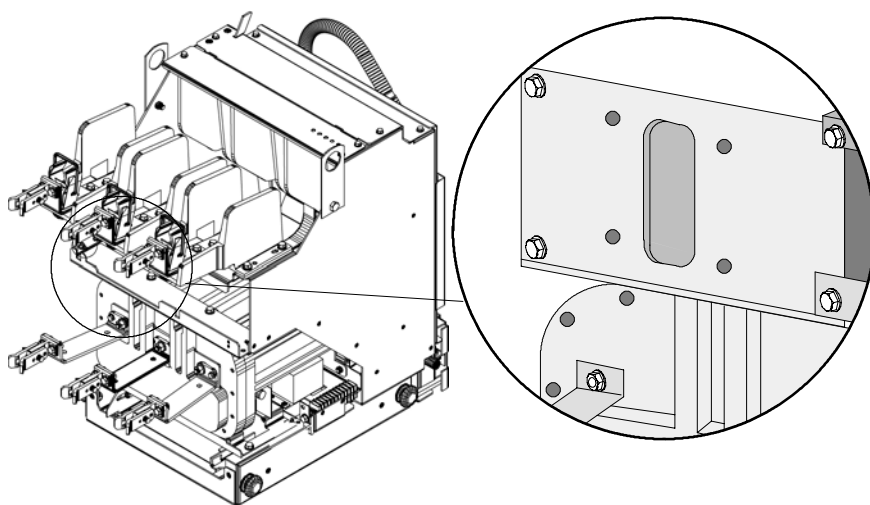
Proceed in reverse order.



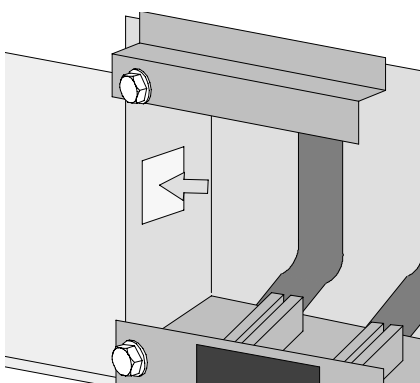
A pin is located on one of the fuse plugs: it must be directed to the VT on mounting.



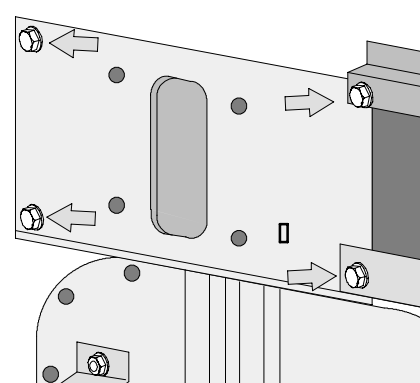
replacing the Voltage Transformer



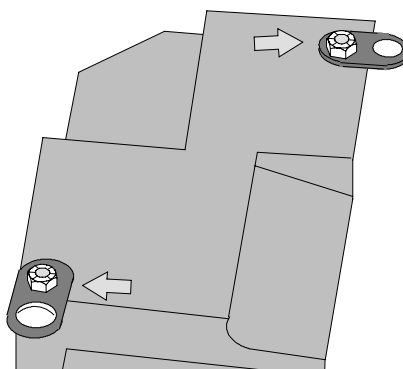
removal



Remove the fuses.
Mark and disconnect wiring.
Disconnect the earth circuit.

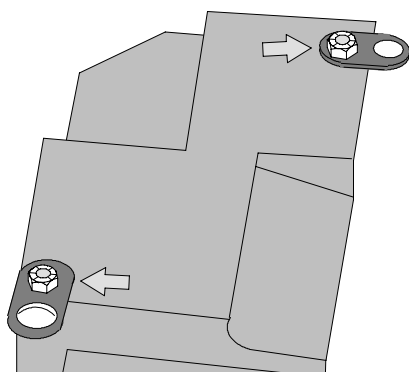


Remove the screws and the VT.

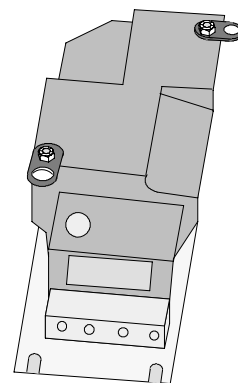


Remove the connection pads and
store them for reassembly.

fitting



Fit and lock the connection pads...



... respecting the mounting direction.

Tightening torque: 13 Nm.

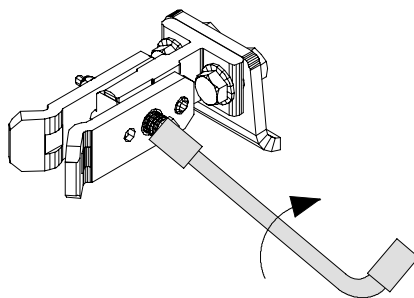
Fitting the VT

Proceed in reverse order.

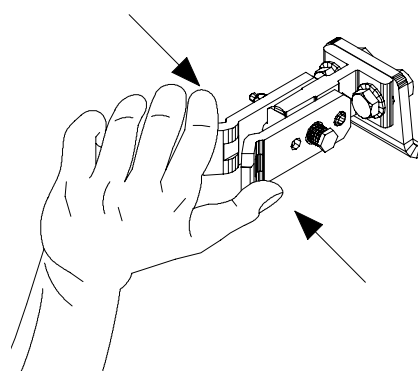
- lock the fixing screws.

Tightening torque: 13 Nm.

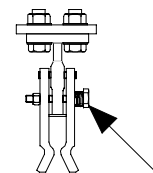
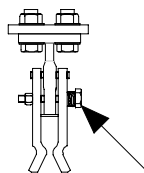
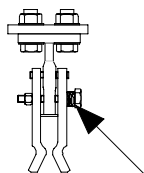
remove the probes



Slightly unscrew the nut holding the probe in place.



Press the edge of the probe to extract it.



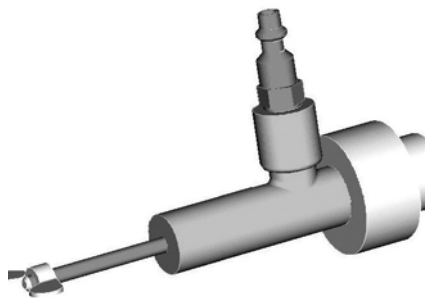
Mark the direction and orientation of the screws.

SF6 gas recovery conformity rules

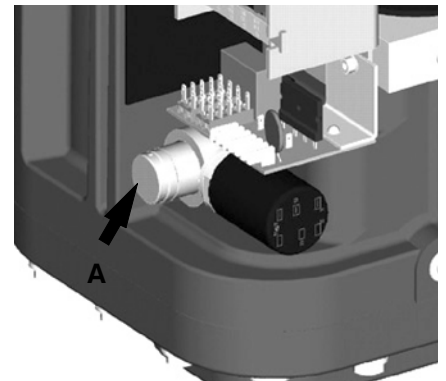
The SF6 must be removed before any dismantling operation can be carried out in compliance with the procedures described in IEC-61634 and according to the following instructions.

The gas must be treated in compliance with IEC-60480.

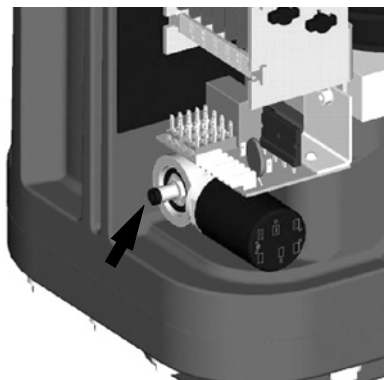
intervention method



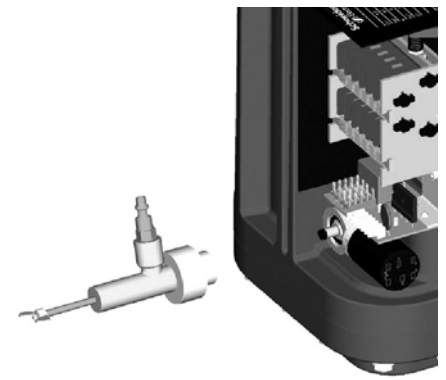
Tool necessary for the operation



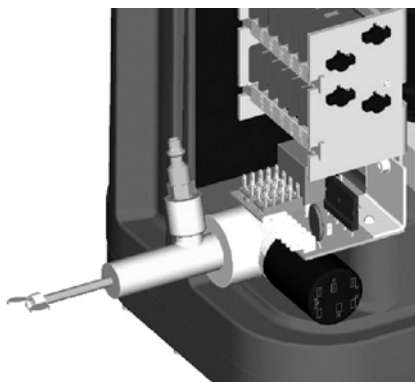
Unscrew the plug (A).



Plug dismounted.



Connect the vacuum/filling device.



Vacuum/filling device connected.



Wait until the pressure gauge shows 0 (15 min to empty the tank) before removing the connection.

anomaly, probable causes and solutions

The information given below ensures minimum interruption of operation.

If the solutions proposed are not effective, consult **your nearest Groupe Schneider Electric service centre.**

symptoms	defective devices	probable causes and solutions
closing impossible	LV supply source	Nominal supply voltage insufficient (less than 85%) on pick-up current. <ul style="list-style-type: none"> ■ restore voltage to its nominal value. Protection fuse blowing. <ul style="list-style-type: none"> ■ remove the fault.
	Incorrect connection of electro coils on replacement. Rectifier in event of an AC source.	<ul style="list-style-type: none"> ■ see series connection diagram instead of parallel connection. Rectifier defective. <ul style="list-style-type: none"> ■ replace the printed circuit.
beating the device does not remain closed	supply source	Supply voltage insufficient (less than 85% of nominal voltage on pick-up current). <ul style="list-style-type: none"> ■ restore voltage to its nominal value.
	400 D type contactor trip unit (with mechanical latching)	Trip unit supplied. <ul style="list-style-type: none"> ■ see cause of trip unit excitation.
	Incorrect connection of electro coils on replacement.	<ul style="list-style-type: none"> ■ see series connection diagram instead of parallel connection.
abnormal temperature rise of closing electrode coils.	energy source	Supply voltage exceeding 110% of nominal voltage. <ul style="list-style-type: none"> ■ restore voltage to its nominal value. NB: the contractor must provide a protection fuse.
opening impossible on 400D type contactor (with mechanical latching).	voltage shunt release	No voltage at release terminals. <ul style="list-style-type: none"> ■ check the circuit to restore power supply (and auxiliary contact). Coil damaged. <ul style="list-style-type: none"> ■ replace the release. Release incorrectly set. <ul style="list-style-type: none"> ■ reset position. Auxiliary contacts damaged. <ul style="list-style-type: none"> ■ replace contacts.
difficult breaking of holding winding insertion contact on type 400 standard contactor.	Insertion contact	Contact incorrectly adjusted. <ul style="list-style-type: none"> ■ reset.
	Capacitor	Capacitor defective. <ul style="list-style-type: none"> ■ replace the printed circuit.
fuse blowing	fuse	Supply voltage too weak, causing incomplete closing of coil. <ul style="list-style-type: none"> ■ restore voltage to its nominal value. Holding coil insertion contact incorrectly set. <ul style="list-style-type: none"> ■ set the insertion contact.

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07896865EN revision : 02

As standards, specifications and designs change from time
to time, please ask for confirmation of the information given
in this publication.

Conception, rédaction: Service Documentation
Technique T&D

Edition du : **15/05/2008**